SEMESTER END EXAMINATION APRIL-MAY, 2026

Course Name: - Electronics and Communication Engineering **Semester:-** IV
Paper Name: -Microcontrollers & Microprocessor Interfacing **Paper Code:-** NEC403
Time - 3 Hrs + 20 minutes per hour extra time for V.I. & examinees with writer. **Max Marks-70**

Instructions:

- The question paper consists of three sections namely A, B, C. All sections are compulsory.
- Section A- Each question carries **3 mark. All questions are compulsory**.
- Section B- Answer any **5 out of 7** given questions. Each question carries **7 marks**.
- Section C- Answer any **2 out of 3** given questions. Each question carries **10 marks**.

Section - A
Multiple Choice Questions

1. Answer all the following questions. **5x3 =15**

i) Which register in 8086 is used as a base pointer for stack operations?

A. AX
B. BX
C. SP
D. BP

ii) Which register pair in 8085 is used for 16-bit address calculations?

A. BC
B. DE
C. HL
D. None of the above

iii) In an 8051 microcontroller, which pin is used for external interrupts?

A. P3.0 and P3.1
B. P3.2 and P3.3
C. P3.4 and P3.5
D. P3.6 and P3.7

iv) The clock frequency of an 8085 microprocessor is 5MHz. if the time required to execute an instruction is 1.2 μs, then the number of T-states needed for executing the instruction is

A. 4
B. 5
C. 6
D. 7

v) For the 8085 assembly language program given below. Assume that the carry flag is initially unset (0). the content of the accumulator after the execution of the program is

```
MVI A, 77H
RLC
MOV B, A
RLC
RLC
ADD B
RRC
```

A. 8CH
B. D4H
C. 23H
D. 15H

Scanned with OKEN Scanner

Section – B
Short Answer Questions

2. Answer any five of the following questions. **5x7=35**

i. Discuss the role of the Program Counter (PC) and explain how it is used during the execution of a program in the 8085 microprocessor.

ii. Describe Direct Memory Access (DMA) and its advantages over traditional data transfer methods.

iii. Describe the structure and operation of cache memory. What are its benefits and drawbacks?

iv. Describe the architecture of the 8051 microcontroller, highlighting its key features.

v. Explain the key principles of RISC architecture. How does it differ from CISC architecture?

vi. Explain the complete timing diagram of the LDA instruction in the 8085 microprocessor, detailing each machine cycle, control signals, and the flow of address and data.

vii. Describe and explain memory segmentation in the 8086 microprocessor with a diagram. If the value of the Code Segment (CS) register is 4324H and the values of different offsets are as follows: BX = 0325H, IP = 0280H, DI = 0347H, calculate the physical (effective) address of the memory location pointed to by the CS register.

Section – C
Descriptive Questions

3. Answer any two of the following question. **2x10=20**

i) Draw and Explain block diagram of PPI IC 8255A and also explain format of its control word.

ii) Design and explain Memory Interface circuitry for 8086 minimum configurations to interface 8KB of SRAM using 4KB SRAM Chips and 8KB of EPROM using 4KB EPROM Chips with 8086 microprocessors.

iii) Describe the architecture of the 8085 microprocessors, focusing on its functional blocks.

****

Scanned with OKEN Scanner